

FRIDMAN, Rudolf Arkad'yevich; MAKSIMOVICH, A.G., red.; MEDRISH, D.M.,
tekhn.red.

[Perfumes and cosmetics; a manual for salesmen] Parfumerno-
kosmeticheskie tovary; v pomoshch' prodavtsu. Moskva, Gos.
izd-vo torg. lit-ry, 1957. 49 p. (MIRA 11:5)
(Cosmetics) (Perfumes)

FRIDMAN, Rudol'f Arkad'yevich; DAYEV, N.A., retsenzents; KIPORENKO,
S.F., retsenzents; KALENOVA, K.I., spetsred.; KALAZHS, R.I.,
red.; SOKOLOVA, I.A., tekhn.red.

[Toiletries; manufacture, use, and analysis] Kosmetika;
proizvodstvo, primeneniye, analiz. Izd.2.. perer. i dop.
Moskva, Pishchepromizdat, 1959. 412 p. (MIRA 12:4)
(Toilet preparations)

FRIDMAN, Rudol'f Arkad'yevich; BORISOVA, G.A., red.; MEDRISH, D.M.,
tekhn. red.

[Consumers' information about perfumery and cosmetics] Pokupateliu
o parfiumerii i kosmetike. Leningrad, Gostorgizdat, 1961. 191 p.
(MIRA 14:8)

(Beauty culture) (Perfumes)

Friedman, R. H.

(Use of) salts of aromatic sulfonic acids in crude oil production. M. A. Gelman, A. Ya. Larin, V. B. Smeets, and R. H. Friedman. *Trudy Inst. Neft. Akad. Nauk S.S.S.R.* 6, 100-101 (1955). The Russian detergents DS (I) are sulfonic acid esters, RArSO_3Me , which possess both washing and wetting characteristics. They dissolve easily in water, are easily adsorbed on the interface oil-aq. soln. or oil-rock, and appreciably reduce the interfacial tension. They are effective in acid treatment of oil wells. Lab. tests showed that I are useful in secondary recovery by water-flooding. B. Z. Kamich

jm

FH

0005

21
 4
 4E7g-1
 Surface-active agents and their adsorption on mineral
 surfaces. M. A. Goldman and E. A. Fridman. *Trudy Inst.
 Khim. Akad. Nauk S.S.S.R.* 7, 236-64 (1955). Four indus-
 trial surfactants (compns. of which are not specified)
 dissolved in Russia were examined for their effect on surface
 tension of water, sea water, dist. water, and 6% NaCl
 soln. Their adsorption on quartz surfaces from the above
 solns. was also studied, and surface tension before and
 after adsorption was measured. Concn. ranged from 0-10.
 mg. of surface-active agent per l. of solvent. V. E. R.

GEYMAN, M.A.; FRIDMAN, R.A.

Effect of structural and mechanical properties of expelled oil on the
residual-oil saturation. Neft.khoz.33 [i.e.34] no.9:29-34 S '56.
(Oil field flooding) (MIRA 9:10)

GUYMAN, M.A.; KHANMURZIN, I.I.; FRIDMAN, R.A.

Controlling structural and mechanical properties of drilling muds.
Azerb. neft. khoz. 37 no.2:16-21 P '58. (MIRA 11:6)
(Oil well drilling fluids)

FRIDMAN, R. A.

with M. A. Geyman "Dislodging the Romashkino Field Petroleum From Loose Sands Carried Out at a Low Temperature"

Transactions of the Petroleum Institute, Acad. Sci. USSR, v. 11, Oil Field Industry, Moscow, Izd vo AN SSSR, 1958. 346pp.

GEYMAN, M.A.; FRIDMAN, R.A.

Flooding the Romashkino oil from unconsolidated sands at low
temperatures. Trudy Inst.nefti 11:193-208 '58. (MIRA 11:12)
(Oil field flooding)

FRIDMAN, A. M.

"Nonsettling Filtration of Coagulated Water in Pressure Filters With Granular Mixtures" Cand Tech Sci, Chair of Water Supply, Leningrad Construction Engineering Inst, Min Higher Education, Leningrad, 1954. (KL, No 2, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational SO: Ser. No 508, 27 Jul 55

FRIDMAN, R.M.

The technology of the manufacture of articles from zinc-sulfide glass. Stek. i ker. 19 no.8:39-40 Ag '62. (MIRA 15:9)

1. Stekol'nyy zavod "Krasnyy May".
(Zinc sulfide) (Glass)

L 02373-67 EWP(a)/EWT(m) WH
ACC NR: AP6032502

SOURCE CODE: UR/0413/66/000/017/0061/0061

INVENTOR: Mazo, E. E.; Iodo, S. S.; Yakimovich, V. I.; Fridman, R. M.

ORG: none

32
B

TITLE: Opalescent glass containing no lead. Class 32, No. 185466 15

SOURCE: Izobreteniya, promyshlennyye obraztuy, tovarnyye znaki, no. 17, 1966, 61

TOPIC TAGS: opalescent glass, illumination engineering glass, *light scattering glass*

ABSTRACT: An Author Certificate has been issued for opalescent glass containing no lead with high illumination engineering properties. The glass has the following composition: SiO_2 , 60.3%; Al_2O_3 , 8.5%; CaO , 1.4%; SrO , 3%; ZnO , 2%; Na_2O , 16.3%; ZrO_2 , 2.5%; cryolite, 6%.

[B0]

SUB CODE: 11/ SUBM DATE: 26Oct61

Card 1/1 vmb

UDC: 666.22 : 666.263

FRIDMAN, R.N.; RUBINA, S.L.

Postvaccinial allergy to BCG vaccine of various concentration. Probl. tuberk., Moskva no.4:63 July-Aug. 1950. (CML 20:1)

1. Of Voronezh Institute of Epidemiology and Microbiology (Director -- V. M. Kruglikov; Scientific Director -- Docent M. V. Zemskov) and of the Oblast Tuberculosis Dispensary (Head Physician N. S. Pokhvistnev; Scientific Director -- Prof. L. D. Shteynberg).

Friedman, R.N.

PLANE 1 FOR INFORMATION SON/359

Kompleksnye tekhnicheskaya i avtomatizatsiya proizvodstva; iz opyta savodov
Priblizheniya (Overall Industrial Mechanization and Automation;
From Experience of Factories Under the Five Council of the National Economy)
[Penza] Priblizheniya tekhnicheskaya i avtomatizatsiya, 1977. 200 p. Izvanya elip listov.
2,000 copies printed.

Ed.: V. Star'kov; Tech. Ed.: Ye. Vorobova.

REMARKS: This collection of articles is intended for the general reader inter-
ested in the mechanization and automation of machine-tool production.

CONTENT: The efforts of industrial workers of the Penza district to fulfill
need of the objectives set forth in the Seven Year Plan are discussed
in these 11 articles. The need for complete automation in the production of
machine tools and instruments is strongly emphasized. So, practicalities are
mentioned. There are no references.

TABLE OF CONTENTS:

MACHINE-DEPENDENT PROCESS EQUIPMENT

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[Engineer]. The Automation of Work in the Chemical Department of
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FOR OVERALL DEVELOPMENT IN PRODUCTION TECHNOLOGY

Savchenko, I.M. [Candidate of Technical Sciences], and K.A. Kuznetsov
[Engineer]. Method of Processing Parts Grouped According to the Type of
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Legat, I.M., and V.P. Dolgin. On the Road of Technical Progress 200

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Card 1/3

VL/vm/imp
8-11-80

(11)

PANIKAROVSKAYA, G.V., FRIDMAN, R.O.

Clinical significance of a new method for diagnosing Botkin's disease in children [with summary in English]. *Pediatrics* 36 no.4:29-33 Ap'58 (MIRA 11:5)

1. Iz kafedry pediatrii (zav. - prof. R.Yu. Kol'ner) lechebnogo fakul'teta Kiyevskogo meditsinskogo instituta (dir. - dotsent I.N. Alekseyenko) na baze 2-y detskoy infektsionnoy bol'nitsy (glavnyy vrach A.A. Rudik).
(HEPATITIS, INFECTIOUS)

PLASTININ, V.V.; FRIDMAN, R.S.

Chemical reactions in spectrum analysis. Izv. vys. ucheb. zav.;
fiz no.6:176-177 1961. (MIRA 15:1)

1. Irkutskiy gosudarstvennyy universitet imeni Zhdanova.
(Chemical reactions) (Spectrum analysis)

POROZHENKO, B.L.; FRIDMAN, R.S., red.; KOGAN, V.V., tekhn. red.

[Handbook on nonferrous and rare metals and their compounds used in laboratory practice; main indices of the quality of specimens] Spravochnik po tsvetnym i redkim metallam i ikh soedineniim, primeniaemym v laboratornoi praktike; osnovnye pokazateli kachestva preparatov. Sost. B.L.Porozhenko. Moskva, Goskhimizdat, 1962. 627 p. (MIRA 16:1)

(Nonferrous metals--Handbooks, manuals, etc.)

(Metallurgical laboratories--Handbooks, manuals, etc.)

KORENMAN, Izrail' Mironovich; FRIDMAN, R.S., red.; PANTELEYEVA, L.A.,
tekhn. red.

[Introduction to quantitative ultramicroanalysis] Vvede-
nie v kolichestvennyi ul'tramikroanaliz. Moskva, Goskhim-
izdat, 1963. 191 p. (MIRA 17:2)

FRIDMAN, S.

BERSHAK, P.; KUDRYAVTSEV, Ye.; FRIDMAN, S.

Double capacity sieve middling purifier. Muk. elev. prom. 23 no.12:
17-18 D '57. (MIRA 11:2)

1. Tekhnicheskij otdel Ministerstva khleboproduktov SSSR (for Bershak).
2. Moskovskiy mel'nikhnny kombinat No.3. (for Kudryavtsev, Fridman).
(Sieves)

BAUKH, V.; FRIDMAN, S., inzh.

Using reedwork construction elements. Sil'. bud. 9 no.2:4-5 F '59.
(MIRA 12:6)

1. Nachal'nik seveta Shiryayevskoy mezhdukolkhoznoy streitel'noy
organizatsii Odesskoy oblasti (for Baukh).
(Ukraine—Reed (Botany)) (Farm buildings)

FRIDMAN, S. A.

CPA

The luminescence of ZnSCu and ZnS.CdSCu α -phosphors and the structure of phosphorescence centers
 V. L. Levshin and S. A. Fridman, *J. Phys. Chem.*
 (U. S. S. R.) 6, 1217 (1962). The extinction law of
 the spectra and the total light emitted by ZnSCu and
 ZnS.CdSCu α -phosphors indicate that the centers of
 fluorescence are not complexes of many thousands of
 molecules but have a rather simple structure. The light
 emitted passes through a max., then through a min. and
 then increases very rapidly above 1200° as the temp. is
 increased. Addn. of NaCl and KCl gives a min. at about
 12%, a max. at 10% and then again a sharp decrease. Up to
 10% added CdS the quenching rate is decreased but above
 10% it increases and above 20% again decreases owing to a
 deforming influence of Cd atoms on the structure of the
 fluorescence centers. F. H. Bathpaus.

3

Research on radium luminescence. S. A. Fridman.
Bull. Acad. Sci. U.S.S.R., Div. Phys. 9, 117, 27 (1945).
 The author made the following expts.: (1) The amount
 of Ra was varied from 0.005 mg. to 1 mg. per g. ZnS.
 The brightness increased with increasing amt. of Ra but
 the curve showed a tendency to satn. By extrapolating to
 a max. intensity I_0 it was found that $\log \frac{I_0}{I_0 - I}$ is linear;
 (2) The increase of brightness in the first 17 days was
 found independent of the Ra content; the decrease of
 brightness in function of the Ra content was studied over a
 period of 2.5 years; the resulting curves are different
 from those given by Berndt ("Radioactive Leuchtfaen" 1920).
 The constant λ of the Rutherford equation of de-
 cay remains const. throughout this period for each sample;
 it is proportional to the initial intensity $\lambda = KI_0$. Thus
 the decay of radiation depends not on the amount of
 Ra but on the compn. of the material given by the initial
 intensity of light. The author concludes that: (a) in
 collisions of the active center with an α particle the center
 is destroyed and no luminescence is emitted; (b) in col-
 lisions with secondary electrons the center remains intact
 and there is luminescence. S. Pačeser

CA

3

Intensity and spectral distribution of the radiation from zinc sulfide luminophore with various activators. S. A. Fridman, A. A. Chetepnev, and T. S. Dobrolyubskaya (Lebedev Inst. Phys., Moscow). *Doklady Akad. Nauk*

Sov. K. 37, 141 (1961), *Chem. Abstr.* 1947, 11, 181 cf. C.I. 42, 57, 14. The luminophores were excited by a quartz Hg-vapor lamp. Optimum concns. for the following activators in ZnS are reported: Ag, Cu, Zn, Mn, Fe, Co, and Ni. In all cases the intensity of the light was greater for specimens which had been heated at 900° than for those heated at 1200°. An asymmetrical brightness curve was obtained for Cu as an activator, the decrease in brightness in the region of higher concn. being steeper than the increase in the region of lower concn. Of all the activators tested, Cu gave the best results. The addition of Ag to ZnS already containing Cu reduced the luminescence only slightly, while the addition of Mn to the same combination reduced it sharply. The effects of the metals of the Fe group, especially of Cu, were still more pronounced. The spectra of specimens heated at 900° showed the characteristic bands of Zn; at higher temps. (1100-1200°) these became weaker. The position of the maxima of the bands characteristic of the individual activators was not influenced by the temp. to which the specimens were heated. In the ZnS-Cu phosphors the max. was displaced toward the short wave lengths at concns. above the optimum. The addition of a second activator reduced the intensity of the Cu band. When several activators were introduced the spectral curves showed complicated reciprocal effects. M. G. Moore

CA

3.0

Relations between the zinc and copper luminescence bands in zinc sulfide luminescence. S. A. Fridman, A. Cherepnev, and T. B. Dobrolyubskaya. *Doklady Akad. Nauk S.S.S.R.* 26, 1341-4 (1947); *Chem. Zvestr.* (Russia Zone Ed.) 1948, 1, 509; cf. *C.A.* 42, 5774i; 44, 7181i.---A study was made of the "stationary" luminescence by using an exciting wave length of 365 mμ and a temp. range from room temp. to 330°. The 465-mμ band (Zn as activator) almost completely disappeared at 150-200°, while the Cu band still showed almost the same intensity at this temp. as at room temp. At a Cu concn. of 10⁻⁴ g. per g. of ZnS even at room temp. only the Cu band is visible. For luminescence heat-treated at a low temp. this band showed a max. intensity at room temp. When heat-treatment was at 300° and higher, the max. was at 100-150°. The Cu band appeared in pure ZnS in specimens heated to 500°. The spectra of specimens heat-treated at 500° showed a band with a max. at 465 mμ, which is ascribed to ZnO. These results can be used for the detn. of small amts. of Cu in ZnS.
M. G. Moore

Phys. Inst. in Pavlov, A S USSR

CHECHIK, N.O. and FRIDMAN, S.A.

"Photoelectric Photometry of Temporarily Luminous Bodies"

Zhur Tekh Fiz., 1948, V 18, No. 1 p. 35.

Inst. of Automatics and Telemechanics, AS USSR (for Chechik) and Physics Inst.
im. Lebedev AS USSR.

new type of zinc sulfide luminophor. S. A. Friedman and A. A. Cherepanov (P. N. Lebedev Phys. Inst. Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.R.* 59, 53-55 (1948). — The new type is characterized by a lower afterglow and more uniform distribution of the radiation over the whole length of the decay. The fractions of the total energy radiated within 0.10, 1.0, 10, 100, 1000, 10000, 100000 and 10,000,000 sec. are 8.7, 15.4, 24.4, 26.1, and 25.4%, as compared with 10.4, 23.2, 31.9, 22.3, and

0.2% for the old type of ZnS luminophor, at equal excitation. The total amt. of energy accumulated and radiated is 30% higher.

N. Thom

N. Thomsen

ASUSLA METALLURGICAL LITERATURE CLASSIFICATION

VAVILOV, V.S.; VUL, B.M.; GALKIN, G.N.; FRIDMAN, S.A.

Performance of "atomic" sources of current with double transformation of energy. Fiz.tver.tela 1 no.5:826-827 My '59.

(MIRA 12:4)

1. Fizicheskiy institut im. P.N. Lebedeva.
(Semiconductors)

85774

S/048/59/023/011/008/012
B006/B056

24.3500 (1035, 1138, 1160)

AUTHORS: Vasil'yeva, Ye. G., Fridman, S. A.

TITLE: Experience Concerning the Use of Thermography for the Investigation of Zinc Sulfide H

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol. 23, No. 11, pp. 1347-1350

TEXT: The main task to be performed by the authors consisted in the physico-chemical investigation of luminophores on a zinc sulfide base by means of thermography (i.e. investigation of physico-chemical processes by means of the thermal effects accompanying them - heat emission and heat absorption). Thermography, which, itself, has a wide field of application, was used by Konstantinova-Shlezinger (Ref. 2) and her collaborators for the purpose of investigating luminophores. It has hitherto not been used for the investigation of zinc sulfide. The authors used ZnS from the "Krasnyy khimik" plant. Figs. 1 and 2 show the heating- and cooling curves of pure ZnS. The thermograms are characterized by five thermal effects: a negative one at 100°, positive effects at 275 and 475°, the sums of the

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85774

Experience Concerning the Use of Thermography S/048/59/023/011/008/012
for the Investigation of Zinc Sulfide B006/B056

negative effects with minima at 600, 645, and 675°, and of the positive effects at 1050°. In order to be able to explain these thermal effects, ZnS samples were heated at the temperatures corresponding to these effects, after which they were investigated with respect to their X-ray- as well as to their luminescence spectra. The latter were excited by means of 365 mμ. ZnS annealed at 450° shows yellow luminescence, at 650° yellow-green luminescence with a maximum at 510 mμ, without afterglow (Fig. 3). The results of the X-ray analysis are shown in a table. The lattice, which is cubically face-centered up to 580°, is found to vary with a further rise of temperature. Further, ZnS was heated with 5% NaCl, and the emission spectra were investigated. The annealing temperatures were adapted to the thermal effects; Fig. 5 shows the luminescence spectra of ZnS+NaCl at various annealing temperatures. At 560 and 580° a luminescence maximum occurred at 510 mμ, and at 600° blue glow with a maximum at 470 mμ was observed. The brightness maximum of blue glow occurred at 915°, after which brightness again decreased. An X-ray analysis showed the occurrence of new bands at 600-740°. The authors investigated also the heating curves in H₂S (Fig. 7); the test vessel is shown in Fig. 6. The results obtained permit the following interpretations of the thermal effects: 1) 50 - 100 - 190° - removal of moisture.

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Experience Concerning the Use of Thermography S/048/59/023/011/008/012
for the Investigation of Zinc Sulfide B006/B056

- 2) 190 - 275 - 380°: crystallization following the dehydration effect.
3) 415 - 475 - 520° - exothermic oxidation effect: $2 \text{ZnS} + 3\text{O}_2 = 2\text{ZnO} + 2\text{SO}_2 + 121 \text{ kcal}$. 4) 600 - 645 - 675° transition to a new shape of the crystal lattice, and 5) 1050°: development of wurtzite structure. There are 7 figures, 1 table, and 3 references: 2 Soviet.

ASSOCIATION: Fizicheskii institut im. P. N. Lebedeva Akademii nauk SSSR
(Institute of Physics imeni P. N. Lebedev of the Academy
of Sciences, USSR)

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Card 3/3

20845

S/048/61/025/003/034/047
B104/B202

9.4160 (also 1137,1395)

AUTHORS: Levshin, V. L., Voronov, Yu. V., Rutan, V. B., Fridman, S.A.,
and Shohayenko, V. V.

TITLE: Study of the effect of double activation with silver and
samarium on the localization levels and the emission of
zinc sulfide phosphors

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya,
v. 25, no. 3, 1961, 392-399

TEXT: This paper was presented at the 9th conference on luminescence
(crystal phosphors), Kiyev, June 20 to 25, 1960. It is the first of a
series planned by the authors in which they study the interaction between
Ag and Sm activators in ZnS-Ag,Sm phosphor. When producing the specimens
4% magnesium chloride was partially added as flux. The quantitative data
given in the present paper were obtained from specimens to which fluxes
had been added. The authors studied phosphors which had been activated
only with silver or only with samarium and phosphors containing 10^{-4} g/g Ag
in which the samarium concentration was varied in the range 10^{-7} to

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S/048/61/025/003/034/047

B104/B202

Study of the effect of double...

10^{-3} g/g. Furthermore, they studied phosphors which contained 10^{-4} g/g samarium and 10^{-7} to 10^{-3} g/g silver. Ag gives a band with $\lambda_{\max} = 450 \text{ m}\mu$. Sm gives three bands which have line character and which lie in the green, orange, and red spectral range. The most intense group lies at $650 \text{ m}\mu$. The type of luminescence centers could not be explained by comparing the line intensities as functions of the composition. It is possible that only one type of luminescence centers exists which in the respective states of excitation give different bands. Using the formula

$$E = \frac{kT_1 T_2}{T_2 - T_1} \left(\ln \frac{\beta_2}{\beta_1} + 2 \ln \frac{T_1}{T_2} \right) \quad (1)$$

suggested by I. A. Parfianovich, where β_1 and β_2 the different heating velocities on thermal deexcitation, T_1 and T_2 the corresponding absolute temperatures of the peaks of thermal deexcitation studied, and E the energy depth of the peak, the authors obtain the following values for the depth of the localization levels of samarium:

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Study of the effect of double...

t, °C -144 -90 -60 -10 +30 +70 +90
g, eV 0,26 0,37 0,43 0,53 0,61 0,69 0,73

The energy depth of silver levels is 0.33 ev. It may be concluded therefrom that new levels are formed due to the interaction of the activators and that this interaction reduces the light sum of the former levels. The increase of the number of activator ions which leads to a decrease of the light sum accumulated leads to the fact that traps which are produced by two neighboring activator ions are less efficient than those traps which are produced by an individual activator ion. Figs. 2 and 3 graphically represent the change of spectral composition of phosphor emission as depending on the ratio and the amount of the activators introduced. The diagrams of Fig. 4 show the temperature effect on the activator interaction. From the results obtained the authors conclude a mutual extinction in both activators which becomes particularly manifest if the two activator concentrations strongly differ. The complex temperature dependence of extinction indicates the existence of different types of luminescence centers. In the following discussion V. Ya. Yaskolko speaks about experiments with CaSO_4 phosphors activated with Mn, Sm, Pb, Zn, Bi, and

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B104/B202

Study of the effect of double...

Ce. He states that in some phosphors activated with two activators, bands of both activators can be observed. Z. A. Trapeznikova is mentioned in the present paper. There are 4 figures and 7 Soviet-bloc references.

ASSOCIATION: Fizicheskii institut im. P. N. Lebedeva Akademii nauk SSSR
(Physics Institute imeni P. N. Lebedev of the Academy of
Sciences USSR)

Card 4/9/

GEL'TS, V.E., inzh.; MOSKOVSKIY, A.P., otv. za vypusk; FRIDMAN,
S.A., red.

[Plastic materials and ion exchange resins, their production and industrial applications; general concept of polymeric materials and their classification. Lecture No.1 (introduction)]Plasticheskie massy i ionoobmennye smoly, ikh proizvodstvo i primeneniye v promyshlennosti; obshchee poniatie o polimernykh materialakh i ikh klassifikatsiia. Lektsiia No.1. (vvedeniye). Kiev, 1962. 38 p. (MIRA 16:3)
(Plastics) (Ion exchange resins) (Polymers)

L3499

S/051/62/013/006/019/027
E039/E120

44 2570

AUTHORS: Fok, M.V., and Fridman, S.A.
TITLE: Relation between the rate of decay and the luminescence yield under strong excitation
PERIODICAL: Optika i spektroskopiya, v.13, no.6, 1962, 869-871
TEXT: The introduction of a quenching agent to accelerate the initial phosphorescent decay produces a reduction in the initial intensity. Tests are made to determine a quantitative connection between the rate of decay and the luminescent yield. The initial decay is determined not by recombination but by the transition of electrons from deep traps. This reduction in intensity follows an exponential law:

$$I = I_0 e^{-\frac{\delta_1 W_2 T^t}{\delta_1 + \delta_2}} \quad (1)$$

where δ_1 and δ_2 are the probabilities of trapping electrons in deep and shallow traps. The luminescent yield η from a phosphor with two types of trap is given by:

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Relation between the rate of decay... S/051/62/013/006/019/027
E039/E120

$$\eta = \frac{1}{1 + \frac{\beta_1 W \delta_1}{\beta W_1 \delta} + \frac{\beta_1 W \delta_2}{\beta W_2 \delta}} \quad (2)$$

where β and β_1 are recombination coefficients of free electrons and holes; δ is the probability of trapping free holes; W_1 , W_2 and W are the probabilities of liberating electrons from deep and shallow traps, and holes from ionised luminescence centres. From this the following expression is derived:

$$\frac{\eta}{\eta_0 - \eta} = \left(\frac{\beta W_1 \delta}{\beta_1 W \delta_2} + \frac{W_1}{W_2} \right) \left(\frac{W_2 T_n}{\log n} - 1 \right) \quad (3)$$

where η_0 is the value of η at $\delta = 0$, i.e. without a quenching agent. This is verified experimentally using zinc sulphide and zinc cadmium sulphides. There are 2 figures.

SUBMITTED: June 4, 1962

Card 2/2

L 18748-63 EWP(q)/EWT(m)/BDS AFTC/ASD JD/JG
 ACCESSION NR: AT3002226 S/2941/63/001/000/0230/0239

AUTHORS: Levshin, V. L.; Voronov, Yu. V.; Gutan, V. B.; Fridman, S. A.;
Shohayenko, V. V. 60

TITLE: Radiation composition of luminescence centers in ZnS-Sm phosphors

SOURCE: Optika i spektroskopiya; sbornik statey, v. 1: Luminestsentsiya.
 Moscow, Izd-vo AN SSSR, 1963, 230-239

TOPIC TAGS: radiation, phosphor, activator, ion, spectra

ABSTRACT: The spectra of Sm^{3+} in ZnS-Sm-phosphor without melt and with 4% MgCl_2 melt were analyzed to study the interaction between activator ions and the lattice and obtain information about radiation composition. The Sm concentration was varied between 10^{-7} and 10^{-2} gm/gm, and in addition a variable concentration of silver was added (10^{-6} to 10^{-3} gm/gm). Three types of luminescence centers were obtained, lying in the red, orange, and yellow-green parts of the spectra. These were enhanced by changing the phosphor composition. A temperature test from 20-120C indicated that several radiation bands were formed as a result of electronic and vibrational frequency combinations. Orig. art. has: 7 figures and 4 tables.

Card 1/2

MISSION NR: AT4001250

S/2504/63/023/000/0064/0134

PHORS: Levshin, V. L.; Arapova, E. Ya.; Blazhevich, A. I.; Vosh-
Ya. V.; Voronova, I. G.; Gutan, V. B.; Lavlov, A. V.; Popov,
I. M.; Gridman, S. A.; Chikhacheva, V. A.; Shchavenko, V. M.

1. Study of cathode luminescence of zinc sulfide and other
phosphors

AN SSSR. Fizicheskiy institut. Trudy*, v. 23, 1963 64.

KEYWORDS: luminescence, cathode luminescence, phosphor, zinc
sulfide phosphor, phosphorescence, photoluminescence, zinc sulfide,
excitation energy, phosphor excitation

ABSTRACT: This is a review article devoted to a theoretical and ex-
perimental analysis of excitation energy losses in cathode lumines-
cence, the approximate maximum cathode luminescence yield, exchange

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ACCESSION NR: AT4001250

of energy between an electron beam and a layer of luminor through which it passes, and also the evolution of individual glow processes as functions of the excitation density and the temperature. Particular attention is paid to an investigation of the persistence properties of ZnS phosphors and their connection with the location and filling of the electron and hole localization levels. A detailed analysis is made of the energy losses resulting from thermalization of the electrons and holes, and it is shown that in cathode luminescence these unavoidable losses are very large and decrease the glow efficiency by approximately 2.5 times. Allowing for other losses, the over-all glow efficiency in cathode luminescence cannot exceed 0.27--0.30. The study of the passage of an electron beam through sublimated layers of zinc-sulfide luminors has established the voltage dependence of the electron penetration depth and the energy losses at different depths of electron penetrations. The dependence of the spectral composition, brightness, and energy glow yield of various zinc-sulfide and phosphate luminors on the current density,

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voltage, and temperature were investigated. A glow efficiency of 0.256 was calculated for one type ZnS-Ag lumino^r. The attenuation of glow of different types of cathode luminors to 0.1, 0.01, and 0.001 of the initial brightness was investigated and the presence of two superimposed de-excitation processes of different durations is established. The causes of the reduction in the duration of afterglow with increasing excitation density are considered. The arrangement and development of localization level of the investigated luminors was studied by the thermal de-excitation method and a connection was established between the attenuation and liberation of the levels at definite depths. "The authors are grateful to senior designer A. G. Ovchinnikov, radio technicians V. P. Ly*sov and Yu. A. Platukhin, senior laboratory assistants Z. M. Bruk, S. B. Kondrashkin, N. V. Mitrofanova, L. N. Petrakov, and A. D. Sy*chkov and laboratory assistant V. P. Prokhorova who helped with the present work." Orig. art. has: 66 figures, 28 formulas, and 4 tables.

Card 3/4

ACCESSION NR: AT4001250

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 00

DATE ACQ: 30Nov63

ENCL: 00

SUB CODE: PH

NO REF SOV: 049

OTHER: 030

Card 4/4

L 58305-65 ENT(m)/ENP(t)/ENP(b) IJP(c) JD/JG
ACCESSION NR: AP5010039 UR/0368/65/002/002/0115/0125

AUTHORS: Levshin, V. L.; Fridman, S. A.; Chikhacheva, V. A.; Shchayenko, V. V. 30

TITLE: Rare earth elements as activators of zinc sulfide cathode
luminors 27 27 27

SOURCE: Zhurnal prikladnoy spektroskopii, v. 2, no. 2, 1965,
115-125

TOPIC TAGS: zinc sulfide optical material, cathode luminescence,
rare earth activator, transition frequency, integral luminescence
yield, emission spectrum

ABSTRACT: This is a continuation of earlier studies (Izv. AN SSSR
ser. fiz. v. 25, 392, 1961 and others) of the interaction between
rare-earth activators and the luminescence centers they produce in
luminors based on ZnS and ZnS.CdS. The present study was aimed at
a comparison of the properties of rare earth activators in ZnS lumi-
nors prepared under controlled conditions and suitable for use as

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L 58305-65

ACCESSION NR: AP5010039

comparison luminors, in order to ascertain the effect exerted on the composition and on the luminescence yield of variations of the synthesis conditions, luminoir composition, and variation of its crystal lattice. The rare earth elements used as activators were Ce, Pr, Nd, Sm, Eu, Tb, Dy, Ho, Er, and Tu. The cathode luminescence spectra were measured either photographically or photoelectrically. The phosphors were excited with an electron beam (10^{-6} A/cm² at 20 kV). The luminescent spectra of the phosphors were investigated with an ISP-51 spectrograph. The measurements were made at room temperature. The results are illustrated in Table 1 of the Enclosure, which shows that the individual rare earth elements have greatly varying activation efficiency. A study was also made of the variation of the emission spectra with change in the CdS composition, using ZnS.CdS-Ho as an example. The results conclude earlier conclusions that the transition frequencies in the centers of rare earth elements are independent of the CdS content and of the average lattice constant, at least for crystals of the ZnS type. The CdS content affects only the integral emission of the phosphor. Original article has: 6 figures and 2 tables

Card 2/4

L 58305-65

ACCESSION NR: AP5010039

ASSOCIATION: None

SUBMITTED: 23Jun64

ENCL: 01

SUB CODE: OP, SS

NR REF SOV: 015

OTHER: 010

Card 3/4

L 58305-65

ACCESSION NR: AP5010039

ENCLOSURE: 01

Table 1. Relative energy yield of ZnS-TR phosphor luminescence

Element	Atmosphere		Element	Atmosphere	
	H ₂ S	NH ₃		H ₂ S	NH ₃
Ce ⁴⁺	7500	8040	Tb ³⁺	64	—
Pr ³⁺	664	312	Dy ³⁺	600	—
Nd ³⁺	870	1800	Ho ³⁺	22	34
Sm ³⁺	1800	—	Er ³⁺	222	—
Eu ³⁺	444	888	Tu ³⁺	7200	10400

Card *AR*
4/4

I 49269-65 EWP(1)/EWP(2)/EWP(3)/EWP(4) P1-4 IJP(a) JD/JG

ACCESSION NR: AP5009532

S/0048/65/029/003/0500/0502

AUTHOR: Levshin, V.L.; Fridman, S.A.; Chikhacheva, V.A.; Shchayenko, V.V. 28
8

TITLE: Investigation of the cathodoluminescence of rare earth activated zinc sulfide and zinc-cadmium sulfide luminophors /Report, 12th Conference on Luminescence held in L'vov 30 Jan-5 Feb 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 3, 1965, 500-502

TOPIC TAGS: cathodoluminescence, zinc compound, sulfur compound, rare earth element, cadmium compound 27 27

ABSTRACT: The cathodoluminescence spectra were investigated for ZnS luminophors activated with each of the rare earths except Pm, and for ZnS-CdS mixtures activated with Ho. The luminophors were prepared at 1200° in an H₂S or an NH₃ atmosphere, and contained 0.01 percent activator by weight. The cathodoluminescence was excited by a 10⁻⁶ A/cm² beam of 20 keV electrons. The experimental technique has been described elsewhere (V.L.Levshin, E.Ya.Arapova, A.I.Vlazhevich, et al., Tr.Fiz. In-ta im. P.N.Lebedeva AN SSSR, 23, 83 (1963)). All but three of the rare earth activators resulted in cathodoluminescence in the visible region. The principal emission bands of each of the material are tabulated. The different

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A 49269-65

ACCESSION NR: AP5009532

dopants can be used to obtain luminescence in narrow spectral regions in the green, yellow, or red. The decay of the luminescence was found to be complex and rapid. Curves are presented for four of the luminophors; for these the luminescence intensity decayed to 1% of its initial value in from 1 to 10 millise. The luminophors prepared in an Mg atmosphere exhibited some luminescence lines not present in those prepared in H_2S ; they were also some 20% brighter and had sharper emission band edges than the materials prepared in H_2S . The addition of CdS to ZnS:Ho luminophors altered the relative intensities of the several luminescence bands but did not introduce any new ones. The cathodoluminescence intensity was maximum for 15% CdS , and a second smaller maximum (due principally to emission in the red) occurred at 48% CdS . Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: OP, SS

NR REF SOV: 002

OTHER: 000

Card 3/2

L 26497-66 EWT(1)/EWT(m)/EWP(t) IJP(c) RM/JD

ACC NR: AP6013055

SOURCE CODE: UR/0048/66/030/004/0573/0580

AUTHOR: Arapova, E.Ya.; Levshin, V.L.; Mitrofanova, N.V.; Reshetina, T.S.; Tunitskaya, V.F.; Fridman, S.A.; Shchayenko, V.V.

ORG: Physical Institute im. P.N. Lebedev, Academy of Sciences SSSR (Fizicheskii institut, Akademiya nauk, SSSR)

TITLE: Luminescence mechanism and the band system of ZnS:Fe luminophors /Report, Fourteenth Conference on Luminescence held in Riga, 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 573-580

TOPIC TAGS: crystal phosphor, luminescence, zinc sulfide, thermoluminescence, IR sensor

ABSTRACT: Although iron-activated zinc sulfide phosphors have been known since 1945, the nature of their luminescence mechanism is still obscure. The writers developed a synthesis procedure for ZnS:Fe phosphors in both powdered and sublimate form. The initial ZnS, containing less than 10^{-7} g/g iron, was mixed with the desired amount of Fe (none to 3×10^{-4} g/g) and heated at 1200° C for 90 min in a stream of HCl. Both the powdered and sublimated specimens proved to be sensitive to infrared. ZnS without Fe has one luminescence band peaking at 450 m μ ; doping with Fe gives rise to another band peaking at 630 m μ ; the intensity of this red band increases with the dopant concentration, while the blue band gradually weakens. Figures in the text show the lumin-

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ACC NR: AP6013055

esconce spectra at different Fe concentrations and the dependences of the intensities of the blue and red bands on the Fe content. Glow curves for the blue and red regions are also shown. Evaluations are made of the trap depth. The glow curve data are consistent with the results obtained in observing IR-stimulated flashes. A band scheme with two levels near the bottom of the conduction band and two levels or groups of levels near the valence band is proposed. Data on the infrared response are presented and discussed. It is suggested that the trapping levels responsible for IR-stimulated light flash may differ from the trapping levels responsible for the thermostimulated peak at 155°, even though both sets of levels are located at about the same depth, (0.06-0.07 eV). Aside from stimulation, infrared also proved to have a quenching effect, particularly in a certain frequency range. The authors are grateful to Z. M. Bruk, V. A. Minayeva and T. F. Filin for assistance in the work. Orig. art. has 9 figures.

SUB CODE: 20/

SUBM DATE: 00/

ORIG REF: 008/

OTH REF: 002

Card 2/2

ACC NR: AP7004983 (A) SOURCE CODE: UR/0048/66/030/009/1494/1499

AUTHOR: Levshin, V.L.; Fridman, S.A.; Chikhacheva, V.A.; Shchayenko, V.V.

ORG: none

TITLE: Investigation of the energy transfer from a ZnS host lattice to a rare earth activator /Report, Fourteenth All-Union Conference on Luminescence (Crystal Phosphors) held at Riga, 16-23 Sept. 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no.9, 1966, 1494-1499

TOPIC TAGS: luminescence, zinc sulfide, rare earth element, luminescence center, luminescence quenching, luminescence spectrum

ABSTRACT: The authors investigated the luminescence of unactivated, holmium-activated and samarium-activated ZnS phosphors containing high and low concentrations of the blue luminescence centers in order to elucidate the role of the blue centers in the excitation of rare earth activator centers in ZnS phosphors, and in particular, to determine whether the extreme view that the rare earth centers can be excited only through the mediacy of the blue luminescence centers is tenable. Specimens with different concentrations of the blue centers were obtained by heating the specimens for different times in a stream of NH_3 . Holmium and samarium were chosen for the study because it had previously been found that the hole level in excited Sm^{3+} centers

Card 1/2

ACC NR: AP7004983

lies somewhat above the level of the blue centers and the hole levels in the Ho^{3+} centers are very low and close to the valence band. The results of the present work were consistent with these earlier findings. The luminescence spectra of the different specimens were recorded at -180° and $+20^{\circ}$ C. From the differences in the intensities of the different luminescence bands from the different specimens it was possible to draw the following conclusions: 1) rare earth activators in ZnS phosphors are coupled directly to the lattice and usually receive energy from the lattice by electron-hole processes; 2) the blue luminescence centers can mediate the transfer of energy to the rare earth ions, but their presence is not necessary for the excitation of the rare earth ions; 3) the significance of the blue luminescence centers in the excitation of a rare earth activator depends strongly on the nature of the particular rare earth activator; 4) a rare earth activator that has appropriate electron levels can strongly quench the ultraviolet luminescence of unactivated ZnS; and 5) at certain temperatures and with appropriately disposed energy levels there can occur resonant transfer of energy from the ultraviolet and blue luminescence centers to rare earth ions, but this process is not the only or even the main mechanism for excitation of a rare earth ion in the ZnS lattice. Orig. art. has: 3 figures and 1 table.

SUB CODE: 20

SUBM DATE: none

ORIG. REF: 008

Card 2/2

ACC NR: AP7004984

luminescence. The relative intensities of the three main thulium luminescence bands varied with variations in the wavelength of the stimulating radiation and in the duration of the H_2S treatment; from this it is concluded that there are two different kinds of thulium luminescence centers. By breaking a crystal that had been heated in H_2S for 1.5 hour it was found that uniform activation of the 0.5 mm thick crystal had been achieved. Single crystal ZnS:Tm phosphors were also produced by heating ZnS single crystals in the mixture that is usually employed for preparing ZnS:Tm powder phosphors. The luminescence spectrum of these crystals was practically identical with that of ZnS:Tm powder phosphors. Orig. art. has: 3 figures and 1 table.

SUB CODE: 20

SUBM DATE: none

ORIG. REF: 002

Card 2/2

ALEKSEYEV, S.P., prof.; FRIDMAN, S.A., red.

[Controlling factory noise in industrial enterprises; a
correspondence seminar] Bor'ba s proizvodstvennym shu-
mom na promyshlennykh predpriyatiyakh; zaochnyy seminar.
Kiev, Leksia 3. 1963. 50 p. (MIRA 17:10)

1. Kiyevskiy dom nauchno-tekhnicheskoy propagandy.

DASHKOVSKIY, A.F., kand. tekhn. nauk; DLIN, F.S.; FRIDMAN, S.A.,
red.

[Correspondence seminar "Intensification of the processes
of lumber drying"] Zaachnyi seminar "Intensifikatsiia
protssessov sushki drevesiny." Kiev. Lektsiia 9. 1963. 57p.
(MIRA 17:9)

1. Kiyevskiy dom nauchno-tekhnicheskoy propagandy.

TARUMOV, A.N., inzh.; FRIDMAN, S.A., inzh.

Experience in studying electrical loads. Prom.energ. 18 no.4:
28-31 Ap '63. (MIRA 16:4)

(Electric power distribution)

LYUDKOVSKAYA, M.A.; FRIDMAN, S.D.; KLEVKE, V.A.

Removal of carbon dioxide from gases by means of a "hot" potash solution. Khim. prom. 41 no.5:339-343 My '65. (MIRA 18:6)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut azotnoy promyshlennosti i produktov organicheskogo sinteza.

FRIDMAN, Sh.A.

Peritoneal manifestations in diabetes mellitus patients. Zdrav.
Belor. 6 no.2:67-68 P '60. (MIRA 13:6)

1. Iz endokrinologicheskogo otdeleniya (nauchnyy rukovoditel' -
kand.med.nauk N.M. Drasnin) 1-y klinicheskoy bol'nitsy g. Minska
(glavnyy vrach A.I. Shuba).
(ABDOMEN) (DIABETES)

10

Ca

PROCESSES AND PROPERTIES INDEX

Isomeric transformations of unsaturated halogen derivatives in the aliphatic series. VII. Reaction of dimethylcyclopropylcarbinol with hydrochloric acid. T. A. Pavlovskaya and Sh. A. Fridman (Leningrad State Univ.). *J. Gen. Chem.* (U.S.S.R.) 15, 427-8 (1945) (English summary); cf. *C.A.* 39, 4047; 38, 1478. — It was shown that the reaction of dimethylcyclopropylcarbinol (I) with concd. HCl gave two isomeric chlorides, 2-methyl-3-chlorobutane (II), J , prop. according to Kishner and Klayman (cf. *J. Russ. Phys.-Chem. Soc.* 43, 505 (1911)), b, 134-4°, d_4^{20} 0.9011, d_4^{25} 0.8998, d_4^{30} 0.8981, d_4^{35} 0.8932, n_D^{20} 1.4384, n_D^{25} 1.43041. The reaction gave, besides the previously known iodide, $\text{C}_4\text{H}_9\text{I}$, a small amt. of what appeared to be a glycol $\text{C}_4\text{H}_{10}\text{O}_2$, b, 134-7°, d_4^{20} 1.0253, n_D^{20} 1.48173, n_D^{25} 1.49168, which resulted from 2 moles of acetyltrimethylene. I stirred with concd. HCl in with 1:1 HCl gave at room temp. up to 70° II, b, 131-3°, d_4^{20} 0.9217, d_4^{25} 0.9182, n_D^{20} 1.44485, n_D^{25} 1.45534; the use of concd. HCl also gave rise to a small amt. of a dichloride, $\text{C}_4\text{H}_8\text{Cl}_2$, b, 65.5-7°, d_4^{20} 1.05147, n_D^{20} 1.45084. II on boiling with 10% K_2CO_3 regenerated 60% I. The authors believe that the formation of II proceeds through transformation of I to the chloride, followed by ring opening preceded by allene rearrangement.

G. M. Kosolapoff

Lab. in. Favorskiy.

ASH-11A METALLURGICAL LITERATURE CLASSIFICATION

REGIONAL DIVISION

SECTION

DATE

10

CA

Transition from derivatives of ethylenic hydrocarbons to derivatives of simplest polymethylene rings. II. Reaction of dimethyl-, methylphenyl-, and diphenylallylcarbinols with hydrochloric and sulfuric acids. T. A. Favorskaya and Sh. A. Fridman. *Zhur. Obshch. Khim.* (J. Gen. Chem.) 78, 1044-1047 (1954). I. 42, 12106.

—Addn. of Me_2CO and $\text{CH}_3\text{CHClCH}_2\text{Br}$ in Et_2O to Me_2 gave 54.5% dimethylallylcarbinol (I), b. $118-19^\circ$, d₄ 0.8483, d₂₀ 0.8380, d₂₅ 0.8305, n_D²⁰ 1.4305. I (13 g.) stirred 2 hrs. with 26 g. concd. HCl with ice-cooling gave were identified: EtCHO (trace), allyl alc. (2.4%), and EtCH:CMcCHO (9.2%). Higher-boiling materials, probably propionaldol and other aldehyde and polymer condensation products, were isolated but not identified.

From this neutral fraction was isolated a water-insol. in whose ultraviolet absorption spectrum showed it contained about 2% (yield at least 0.00% from I) 1,3,5-hexatriene (II) and also indicated the presence of a conjugated diene (III) and the more volatile neutral products gave 34% of a mixt. composed of 87.2% MeC_3CH and 12.8% allene. Authentic II was prepd. according to Karasch and Stern (J. Am. Chem. Soc. 77, 5581) who did not sufficiently stress the delicate nature of this triene. It is advised to sweep the vessels with N_2 ; use freshly distd. Et_2O ; distil at reduced pressure; add traces of hydroquinone to solns. of the triene which are to stand for any length of time or are to be heated. The crystn. of II was apparently obtained for the first time. A discussion and diagram of the mechanism of the pyrolysis of I is presented.

W. H. H.

Metalloorganic compounds. G. Wahr. *FIAT Rev. Ger. mon. Ser.* 1939-1948, *Inorg. Chem.*, Pt. II, 1948, 155-70.

A review with 60 references.

E. H.

Chemistry of organometallic compounds. Charles A. Kraus. *J. Chem. Education* 26, 459-460 (1949). Review with 24 references discussing the reactions of the II and alkyl derivs. of the 4th group elements and their metal salts and halide salts.

John Howe Scott

Synthesis of methylethylallylcarbinol and its transformations under the influence of sulfuric acid. T. A. Favorshaya and Sh. A. Feulman (A. A. Zhdanov State Univ., Leningrad). *Zhur. Obshch. Khim.* (J. Gen. Chem.) 20, 413 (1950).—Addn. over 6 hrs. of 30 g MeEtCO and 150 g. $\text{CH}_2=\text{CHCH}_2\text{Br}$ to 30 g. Mg in 500 ml. Et_2O (after activation with MeI) and stirring 1 hr. gave 33% $\text{MeEt}(\text{CH}_2=\text{CHCH}_2)\text{COH}$, b. 138–40°, d_4^{20} 0.8641, n_D^{20} 1.4310, n_D^{25} 1.4380. In one expt. no carbinol was obtained but a 20% yield of a substance, b. 120–2°, free of CO group or halogen, and which gave only CO_2 on oxidation; repetition of the expt. failed to duplicate this result. Heating 32 g. carbinol with 300 ml. 25% H_2SO_4 1 hr. at reflux gave 8 g. original alc. and 17.5 g. $\text{C}_7\text{H}_{12}\text{O}$, b. 105–7°, d_4^{20} 0.8901, d_4^{25} 0.8613, n_D^{20} 1.4444, identified as $\text{MeEtC}(\text{CH}_2\text{CH}_2)\text{CHOH}$, on the basis of its oxidation with KMnO_4 to MeEtCO and $\text{CH}_2=\text{CHCO}_2\text{H}$. In addn., there were obtained small amts. of dehydration products, C_7H_{10} , b. 90–105°, d_4^{20} 0.7622, n_D^{20} 1.4369, and its dimer, b. 95–7°. No reaction took place with 20% H_2SO_4 . If the prepn. of the carbinol is done conventionally in 2 steps, the yield is poorer (30%). G. M. Kosolapoff

CB

the synthesis of methylethylallylcarbinol and its transformations when acted on by sulfuric acid. T. A. Favor-skaya and Sh. A. Fridman (A. A. Zhdanov State Univ. Leningrad). *J. Gen. Chem. U.S.S.R.* 20, 437-42(1950) Engl. translation).—See *C.A.* 44, 7753a. R. M. S.

CA

Transition from the derivatives of ethylenic hydrocarbons to the derivatives of the simplest polymethylene cycles. III. Reaction of methylphenylcyclopropylcarbinol with hydrochloric and sulfuric acids. I. A. Pavlovskaya and Sh. A. Fridman (A. A. Zhdanov State Univ., Leningrad). *Zhur. Obshch. Khim.* (U. S. Gen. Chem.) 20, 941-94 (1950); cf. C.A. 43, 3770. The action of H_2SO_4 on cyclopropylmethylphenylcarbinol (I) leads to ring-size expansion to 1-methyl-1-phenyl-2-cyclobutanol (II) and dehydration to 2-phenyl-1,1-pentadiene (III). HCl gives 2 reactions: ring opening to $MeCPhCH_2CH_2CH_2Cl$ and ring expansion to a 4 C ring $AcCH_2CH_2CH_2CH_2$.

and 98 g. PhH added to 15 g. activated Mg (by MeI) over 4 hrs. in Et_2O gave 65% I, b.p. 119-21°, d_4^{20} 1.0302, n_D^{20} 1.5107, d_4^{25} 1.0210. I (30 g.) boiled 5 hrs. with 120 ml. 25% H_2SO_4 gave 47% (15 g.) of a product b.p. 90-101°, 50% H_2SO_4 (20 min. boiling) gave 40% of the same substance; this does not have a carbonyl group, is stable to Br in CCl_4 and to $KMnO_4$, but reacts with Na ; a purified sample, d_4^{25} 1.0523, d_4^{20} 0.9997, n_D^{20} 1.5152, on oxidation gave $BrOH$ and $(CO_2H)_2$, while $MeMgI$ gave the unchanged product; attempted oxidation with CrO_3 gave only some $AcPh$ and no cyclic ketone, while HNO_3 gave only a trace of $(CO_2H)_2$; only heating with $KMnO_4$ resulted in formation of a solid acid, $CalH_2O_2$, m. 78°, which on standing in a desiccator becomes sirupy without change of composition. This acid was not $PhMe_2CCO_2H$ (mixed m.p. depression with an authentic sample from $MeMgI$ m.p. depression with an authentic sample from $MeMgI$ and Me mandelate), possibly it was a mixt. of $MePhC(CO_2H)_2$ and $MePhCHCH_2CO_2H$ (m. 37°). The results indicate that the reaction product of I with H_2SO_4 was II. The crude product from the reaction slowly oxidizes with $KMnO_4$, indicating an admixt. of some III, or possibly

4-phenyl-1,1-pentadiene (IV), since a considerable amt. of resinous matter is formed. I failed to react with 1:1 HCl in the cold in 15 min. but concd. HCl gave in 3 hrs. 90-85% of a mixt. of cyclic and unsatd. chlorides, b.p. 144-6°, which could not be sepd. by distn.; in addn. there was isolated a small amt. of $CalH_2O_2$, b.p. 91-7°, d_4^{25} 0.9710, n_D^{20} 0.9520, n_D^{20} 1.5125, giving $BrOH$ and $(CO_2H)_2$ with $KMnO_4$, and identified as III, probably formed from $MePhCCH_2CH_2CH_2CH_2$. The latter could be removed with cold $KMnO_4$ from the mixt. with the cyclic chloride, b.p. 125-7°, d_4^{25} 1.0631, d_4^{20} 1.0183, n_D^{20} 1.5206, identified as 1-methyl-1-phenyl-2-chlorocyclobutane, since it was unchanged after 150 hrs. with hot 20% K_2CO_3 or 15% $NaOH$, while oxidation with hot $KMnO_4$ gave $MePhC(OH)(CH(OH)CO_2H)$, m. 85-6°, which was also obtained from the unsatd. Cl deriv. (above), as well as $BrOH$. The cyclic chloride boiled with 10% alc. $NaOH$ readily yielded IV, which reacted vigorously with milder anhydride, as well as some of its dimer, obtained only in crude state, b.p. 117-18°.

G. M. Kosolapoff

10

CH

The problem of the transition from derivatives of the ethylenic hydrocarbons to derivatives of the simplest polymethylenic rings. III. The reaction of methylphenylcyclopropylcarbinol with hydrochloric and sulfuric acids. A. Favorskaya and Sh. A. Fridman, *J. Gen. Chem. U.S.S.R.*, 20, 613 (1950) (Engl. translation). See C.A. 44, 7781f. R. M. S.

1951

DASHKIN, V.M.; TOVBINA, M.S.; FRIDMAN, Sh.A.; ELOV, V.N.

Preparation of odorous substances, derivatives of
3-hydroxy- γ -pyranone. Trudy VNIISNDV no.6273-80 '63.
(MIRA 17:4)

FRIDMAN, S. D.

"Investigation of the Peculiarities of the Catalytic Hydrogenation of Benzene."
Thesis for degree of Cand. Chemical Sci. Sub. 28 Feb 49, Moscow Inst. of Fine
Chemical Technology imeni M. V. Lomonosov.

Summary 82, 18 Dec 52, Dissertations Presented for Degrees in Science and Engineering
in Moscow in 1949. From Vechernyaya Moskva, Jan-Dec 1949.

FRIDMAN, S.D.
CA

Causes of the inactivity of copper and iron in the hydrogenation of benzene. M. Ya. Kagan and M. D. Fridman. Doklady Akad. Nauk S.S.S.R. 68, 1017 (1970). The fact, pointed out by Khammet and Nham (C.A. 37, 1204), that an active Fe catalyst, though efficiently promoting the hydrogenation of olefins, does not catalyze that of C_6H_6 , and that Pt, Pd, and Ni are active with C_6H_6 , is not adequately explained by the body-centered structure of Fe, as contrasted with the face-centered lattice of Pt, Pd, and Ni. This explanation does not account for the inactivity, in the case of C_6H_6 , of the equally face centered Cu. The contrast between the activity of Fe and Cu in the hydrogenation of olefins, and their inactivity for C_6H_6 , can, however, be interpreted by energy considerations. Chemisorption of either an olefin or of C_6H_6 is accompanied by the rupture of a π -bond. In the case of C_6H_6 , this results in localization of the double bonds, linked with loss of resonance energy. Thus, the rearrangement accompanying chemisorption of C_6H_6 loses 50 kcal/mole as compared with the chemisorption of an olefin, and this loss of energy is a sufficient explanation of the inactivity towards C_6H_6 of a catalyst active towards olefins. Evidently, loss of resonance energy plays a less decisive role in the case of Ni which is generally more active than Cu in both hydrogenation and exchange reactions. Experimentally, pure Cu and Fe, on Al $_2$ O $_3$, proved inactive in the hydrogenation of C_6H_6 at 160-250°, and in the dehydrogenation of cyclohexane at 270-320°. The same catalysts were found active both in the hydrogenation and dehydrogenation of cyclohexene which differs from C_6H_6 by the absence of resonance. The inactivity of Cu and Fe towards C_6H_6 is simply due to the energetic improbability of formation of the intermediate adsorption complex. N. Thon

Monosco Inst. Fine Chemical Engineering

ca. 100. FRIDMAN, S.D.

Kinetics and mechanism of catalytic hydrogenation-dehydrogenation. V. Catalytic reactions of cyclohexene in the presence of copper and iron. S. D. Fridman and M. Ya. Kagan (Moscow Inst. Fine Chem. Technol.), *Zhur. Obshch. Khim. (J. Gen. Chem.)* 31, 874-84 (1951); cf. *C.A.* 45, 4121c. (1) The thermodynamic functions were calculated for the 3 possible reactions of cyclohexene (I). For the hydrogenation $I + H_2 \rightarrow$ cyclohexane (II), the heat $\Delta H = -20800 - 0.38 T + 0.0006 T^2$ and, assuming uniform growth of the entropy in the series $Cal_2 \rightarrow C_{10}H_{16} \rightarrow C_{10}H_{18} \rightarrow C_{10}H_{20}$, the free energy $\Delta F = -20800 + 0.38 T$ in T $C_{10}H_{16}$, the free energy $\Delta F = -10.85 T$, in the temp. range 300-600°K. Hence, for the equil. const. K , at 400, 500, 623, 800°K., $\ln K = 9.0066, 5.8197, 5.2801, 3.6657$, i.e. the equil. is entirely shifted to the right. For the disproportionation $3 I \rightarrow 2 II + C_{10}H_{16}$, $\Delta H = -35842 - 0.09 T - 0.001 T^2$, and $\Delta F = \Delta H$; hence, at 400, 500, 623, 800°K., $\ln K = 0.5711, 5.2718, 5.0433, 4.4074$, i.e. the equil. again is entirely shifted to the right. For the dehydrogenation $I \rightarrow C_{10}H_{16} + 2 H_2$, at 400, 500, 623, 800°K., $\ln K = 1.7013, 4.1755, 4.1510, 5.0110$. At these 4 temps., the free energy changes ΔF° are, for the hydrogenation, -16464, -13208, -12020, -10024; for the disproportionation, -12012, -12040, -12054, -12085; for the dehydrogenation, -3110, -9541, -10921, -10308 kcal./mole. All 3 reactions are probable, with the hydrogenation predominating at low temps., dehydrogenation at higher temps., and disproportionation being very nearly temp. independent. (2) Pure Cu catalysts were prep'd. by depositing, on activated Al_2O_3 , a soln. of $Cu(NO_3)_2$ made from twice-refined electrolytic Cu, and reduction with H_2 at 150-250°, resulting in a catalyst with 15% Cu relative to the wt. of Al_2O_3 . Similarly, 15% Fe catalysts on Al_2O_3 were prep'd. with pure Fe ($NO_3)_3$ and 15 hrs. reduction with H_2 at 450°. In flow expts. on 25 ml. (Cu) catalyst, with I dild. with 1.3-1.5 moles H_2 /mole I, the degree of conversion at 152° was 22.5% (exclusively by hydrogenation), increasing to 98% at 213°. Disproportionation becomes increasingly noticeable with increasing temp. Dehydrogenation becomes distinct (23.6%) at 280°. Under the same conditions, neither is $C_{10}H_{16}$ hydrogenated at the lower temps., nor II de-

hydrogenated at 300°. At the const. temp. of 250°, and const. mean feed rate of 3.0 ml. I/hr., I is converted to the extent of 100%; with a mole ratio $r = H_2:I = 0.3:1$, the reaction is 93% disproportionation and 7% dehydrogenation, and at a ratio 0.5:1 it is 100% disproportionation. Further increase of the ratio, to $r = 0.6:1$, causes partial hydrogenation, and at $r = 2.7:1$ the reaction is 100% hydrogenation. At const. temp., 250°, and $r = 0.3:1$, the degrees of conversion at the contact times $\tau = 10.7$ and 20.2 sec. were $x = 77.5$ and 98.3%, resp., and the percentages of disproportionation (dehydrogenation) 93.1 (6.9) and 97.8 (2.2), resp. At the same temp., $r = 0.5:1$, $\tau = 11.6$ sec., $x = 91.6\%$ (hydrogenation 3.2, disproportionation 96.8%), and at $\tau = 25.7$ sec., $x = 98.9\%$ (exclusively disproportionation). At the same temp., $r = 0.6:1$, $\tau = 10.7$, $x = 81.2$ (hydrogenation 16.3, disproportionation 83.7%), and at $\tau = 23.6$, $x = 99.8$ (4.5, 95.5%). The fall of x with decreasing r is particularly marked with lower concns. of H_2 ; the fraction of I converted through dehydrogenation falls with decreasing r and the fraction converted through hydrogenation increases with decreasing r . Consequently, change of r affects the rates of hydrogenation and of dehydrogenation differently. With I dild. with N_2 :I = 1.7:1, without H_2 , dehydrogenation and disproportionation occur simultaneously, the former increasing and the latter decreasing with rising temp. The total amt. of I converted in the presence of N_2 at 250° and $\tau = 12$ sec. is only $x = 24.3\%$ as against 100% under the same conditions with H_2 . Analogous effects of the temp., of dild. with H_2 , and of variation of r , were observed in the reaction of I on a Fe- Al_2O_3 catalyst between 136 and 150°. Neither does Fe catalyze the hydrogenation of $C_{10}H_{16}$ or the dehydrogenation of II. (3) Disproportionation of I on Cu and Fe proceeds considerably slower than on Pt, Pd, or Ni. The fact that in N_2 the conversion is so much slower than in H_2 indicates the important role of H_2 in the conjugated dehydrogenation-hydrogenation which results in the disproportionation. N. Tien

on FRIDMAN, S.D.

Kinetics and reaction mechanism of catalytic hydrogenation-dehydrogenation. V. Catalytic reactions of cyclohexene in the presence of copper and iron. S. D. Fridman and M. Ya. Kagan (Moscow Inst. Fine Chemicals Technol.). *J. Gen. Chem. U.S.S.R.*, 21, 950-60 (1951) (Engl. translation) —See C.I. 43, R147c.

FRIDMAN, S. D.

The present status of urea manufacture. N. A. Galt.
M. A. Lyudskovskaya, S. D. Fridman, and V. I.
Zagranichnyi. Khim. Nauka i Prom. 1, 609-80(1965).
Review with 84 references. I. Benicewitz

5(1),5(4)

AUTHORS:

Lyudkovskaya, M. A., Candidate of
Technical Sciences, ~~Fridman, S. D.~~, Candidate of Chemical
Sciences, Savel'yeva, L. I. SOV/64-58-7-10/18

TITLE:

Separation of the Mixtures Carbon Dioxide and Ammonia With
Aqueous Solutions of Monoethanol Amines (Razdeleniye smesey
dвуokisi ugleroda i ammiaka vodnymi rastvorami monoetanolamina)

PERIODICAL:

Khimicheskaya promyshlennost', 1958, Nr 7, pp 423-429 (USSR)

ABSTRACT:

V. S. Sveshnikova, M. Ya., Futoryanskaya, A. N., Mukhina, R. Ya,
Kirindasova and M. D. Mantrova took part in this work. To devise
a recirculation scheme of a selective CO₂-absorption in aqueous
monoethanol amine (MEA) solutions in the (Ref 1) urea synthesis
data on the solubility and solution kinetics of the ammonia -
carbon dioxide mixtures must be known. As there are no such data
available in publications the authors carried out corresponding
experiments. The phase equilibrium in the system MEA-NH₃-CO₂-H₂O
was investigated according to the dynamic method. The arrangement
and method employed were taken from the paper by D. S. Tsiklis
and A. N. Kofman (Ref 2). The partial pressure of CO₂ decreases
(the solubility increases) with the increase of the NH₃ content

Card 1/3

Separation of the Mixtures Carbon Dioxide and Ammonia SOV/64-58-7-10/18
With Aqueous Solutions of Monoethanol Amines

in the solution. The partial pressure of NH_3 is a linear function of the CO_2 -concentration. According to the diagrams $\lg P = f\left(\frac{1}{T}\right)$ the solution heat of NH_3 and CO_2 were calculated.

As compared to the solubilities in pure water it was found that by the presence of MEA the solubility of CO_2 increases and that of NH_3 decreases. Under certain conditions the partial pressure of CO_2 can drop to zero whereas (under the same conditions) that of NH_3 attains considerable values. In a schematically shown arrangement the influence exerted by some factors upon the absorption degree of NH_3 was investigated. At a complete CO_2 -absorption the absorption degree of NH_3 decreases with the increase in temperature, the increase of the MEA concentration, a decrease of the intensity of moistening and an increase of the molar ratio $\text{NH}_3 : \text{CO}_2$ in the gas mixture. In the experiments on the NH_3 desorption the authors worked with steam besides an inert gas in a column suggested (Figure) by the Dzerzhinskiy filial GIAP (Dzerzhinskiy Branch of the GIAP). The viscosities of the MEA solutions with CO_2 and NH_3 were determined in a viscosimeter according to Pinkevich. At a constant CO_2 -content

Card 2/3

Separation of the Mixtures Carbon Dioxide and Ammonia SOV/64-58-7-10/18
With Aqueous Solutions of Monoethanol Amines

the viscosity is practically independent of the NH_3 -concentration, whereas at a constant NH_3 -content the viscosity of the solutions increases considerably with the increase of the CO_2 -concentration. Based on the results obtained a scheme for the separation of NH_3 and CO_2 from distillation gases according to the urea synthesis is given. There are 14 figures, 4 tables, and 5 references, 3 of which are Soviet.

Card 3/3

FRIDMAN, S.D.; KLEVKE, V.A.

Urea-formaldehyde fertilizers. Zhur.prikl.khim. 34 no.10:2206¹²
2216 0 '61. (MIRA 14:11)
(Urea) (Formaldehyde) (Fertilizers and manures).

FRIDMAN, S.D.; KLEVKE, V.A.; BELYAYEVA, N.N.; KIRINDASOVA, R.Ya.;
SVESHNIKOVA, V.S.; Primali uchastiye: AKIMOVA, M.D.;
FUTORYANSKAYA, M.Ya.

Condensation of urea with formaldehyde for the production of
fertilizers with slowly assimilable nitrogen. Zhur. prikl.
khim. 38 no.5:1091-1097 My '65. (MIRA 18:11)

LISKOVICH, A.L.; FRIDMAN, Sh.D.

Using aerial gamma-ray survey data for geological mapping.
Sov.geol. 1 no.11:3-15 N '58. (MIRA 12:4)

1. Ministerstvo geologii i okhrany nard SSSR.
(Geology--Maps)

KOGAN, R.M.; FRIDMAN, Sh.D.

Investigating mixtures of radioactive elements with threshold spectrometers. Izv. AN SSSR. Ser.geofiz. no.6:809-817
Je '60. (MIRA 13:6)

1. Akademiya nauk SSSR. Institut prikladnoy geofiziki.
(Radioactive substances--Spectra)

S/049/60/000/004/004/018
E032/E514

AUTHORS: Kogan, R.M. and Fridman, Sh.D.

TITLE: The Energy Distribution of γ -Rays¹⁷ in the Atmospheric Layer Near the Earth's Surface

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1960, No.4, pp.530-547 (USSR)

TEXT: The energy distribution of γ -rays in a layer a few hundred metres thick and lying immediately above the Earth's surface is calculated. A layered model of the atmosphere is employed in which the concentration of the γ sources and the density of the absorbing medium is a function of z only. The calculation is carried out for source and energy distributions which satisfactorily explain real conditions in the energy range 0.15 to 2.5 MeV. The sources of radiation are taken to be radioactive elements of the uranium and thorium series, and also radioactive potassium distributed uniformly in the upper layers of rocks, or radioactive elements with given γ -ray energy deposited in the form of a thin uniform film on the separation boundary between rocks and the atmosphere. Extensive calculations have been carried out for different numerical values of source and
Card 1/2

VB

S/049/60/000/004/004/018
E032/E514

The Energy Distribution of γ -Rays in the Atmospheric Layer Near
the Earth's Surface

absorption parameters and these are summarized in eleven graphs
and seven tables. An estimate is also made of the effect of the
form of the γ field on isotropic γ -ray detectors. There are
11 figures and 7 tables and 9 references: 7 Soviet and 2 English. VB

ASSOCIATION: Akademiya nauk SSSR Institut prikladnoy geofiziki
(Academy of Sciences USSR, Institute of Applied
Geophysics)

SUBMITTED: June 19, 1959

Card 2/2

FRIDMAN, Sh.D.

Studies on the spectral composition of gamma radiation emitted by rocks in their natural location. Izv. AN SSSR. Ser. geofiz. no.8: 1187-1197 Ag '60. (MIRA 13:8)

1. Akademiya nauk SSSR, Institut fiziki Zemli.
(Gamma rays) (Prospecting--Geophysical methods)

BALYASNYI, N.D.; KOGAN, R.M.; NIKIFOROV, M.V.; RENNE, O.S.; FRIDMAN, Sh.D.

Radioisotopic analysis of rocks and soils from the energy spectrum
of gamma rays in the troposphere. Dokl. AN SSSR 140 no.4:807-810
O '61. (MIRA 14:9)

1. Institut prikladnoy geofiziki AN SSSR. Predstavleno akademikom
Ye.K.Fedorovym.
(Radioisotopes--Analysis) (Gamma-ray spectrometry)

KOGAN, R.M.; NIKIFOROV, M.V.; FRIDMAN, Sh.D.

Determining the potassium content in soils by gamma rays. Pochvovedenie
no.8:92-98 Ag '61. (MIRA 14:11)

1. Institut prikladnoy geofiziki AN SSSR.
(Soils--Potassium content)

BALYASNYI, N.D.; KOGAN, R.M.; RENNE, O.S.; FRIDMAN, Sh.D.

Experience in determining RaC' , ThC' and K^{40} in homogenous
granitoids from the energy composition of γ -rays. Izv. AN
SSSR. Ser.geofiz. no.5:664-676 My '62. (MIRA 15:8)

1. Institut prikladnoy geofiziki AN SSSR.
(Radioisotopes) (Gamma rays)

IZRAEL, Yu.A.; KOCAN, R.M.; FRIDMAN, Sh.D.

Deformation of the gamma field in the lowest atmospheric layer
determined by a forest cover. Izv.AN SSSR.Ser.geofiz.
no.8:1126-1135 Ag '62. (MIRA 15:8)

1. Institut prikladnoy geofiziki AN SSSR.
(Gamma rays) (Forests and forestry--Valuation)

BALYASNYI, N.D.; VASILENKO, V.N.; KOGAN, R.M.; FRIDMAN, Sh.D.

Using the spectrum of gamma rays for detecting the dispersion
halos of radium. Izv.AN SSSR.Ser.geofiz. no.4:596-605 Ap '63.

(MIRA 16:4)

(Radium) (Geochemistry)
(Gamma rays--Industrial applications)

VASILENKO, V.N.; DMITRIYEV, A.V.; IONOV, V.A.; KOGAN, R.M.; NAZAFOV, I.M.;
FRIDMAN, Sh.D.

Using the gamma-ray spectrum surveying method in geology.
Sov. geol. 6 no.10:47-62 0 '63. (MIRA 17:1)

1. Institut prikladnoy geofiziki AN SSSR.

KOGAN, R.M., kand.tekhn.nauk; NIKIFOROV, M.V.; FRIDMAN, Sh.D., kand.tekhn.
nauk; CHIRKOV, V.P.; YAKOVLEV, A.F., kand.fiz.-matem.nauk

Determining the water equivalent of snow cover by means of
airplane gamma surveys. Meteor. i gidrol. no.4:51-55 Ap '65.
(MIRA 18:4)

1. Institut prikladnoy geofiziki AN SSSR.

DMITRIYEV, A.V.; NIKIFOROV, M.V.; KOGAN, R.M., kand. tekhn. nauk;
FRIDMAN, Sh.D., kand. tekhn. nauk

Determining moisture of soils by their gamma-radiation. Meteor.
i gidrol. no.7:56-58 J1 '65. (MIRA 18:6)

1. Institut prikladnoy geofiziki AN SSSR.

SVERDEL', I.S., kand. tekhn. nauk; FRIDMAN, S.E., inzh.

Action of a changing magnetic field in separating highly magnetic ore in a water medium. Izv. vys. ucheb. zav.; gor. zhur. 6 no.6:195-197 '63. (MIRA 16:8)

1. Kazakhskiy politekhnicheskoy institut (for Sverdel').
2. Ural'skoye otdeleniye Vsesoyuznogo nauchno-issledovatel'skogo instituta mekhanicheskoy obrabotki poleznykh iskopayemykh (for Fridman). Rekomendovana kafedroy obshchey elektrotekhniki Kazakhskogo politekhnicheskogo instituta.
(Magnetic separation of ores)

IZMODENOV, A.I.; FRIDMAN, S.E.; SHUGOL', L.S.

Dry magnetic separation of finely and coarsely crushed ore with magnetic stratification. Gor. zhur. no.3:57-60 Mr '61.

(MIRA 14:3)

1. Sverdlovskiy sovnarkhoz (for Izmodenov). 2. Uralmekhanobr, Sverdkovsk (for Fridman, Shugol').

(Magnetic separation of ores)

FRIDMAN, S.E.

Equipment for the separation of magnetic impurities. Obog. rud
4 no.1:34-36 '59. (MIRA 14:8)

1. Ural'skiy nauchno-issledovatel'skiy institut mekhanicheskoy
obrabotki poleznykh iskopayemykh.
(Magnetic separation of ores)

SVERDEL', I.S., inzh.; FRIDMAN, S.E., inzh.; SHUGOL', L.S., inzh.

Dry magnetic separation of finely pulverized strongly magnetic ores.
Izv.vys.ucheb.zav.;gor.zhur. 6 no.11:149-153 '63. (MIRA 17:4)

1. Sokolovsko-Sarbayaskiy gornoobogatitel'nyy kombinat (for Sverdel'). 2. Ural'skiy nauchno-issledovatel'skiy i proyektnyy institut obogashcheniya i mekhanicheskoy obrabotki poleznykh iskopayemykh (for Fridman, Shugol').

OKUNEV, A.I.; SHUGOL', L.S.; NAGIRNYAK, F.I.; FRIDMAN, S.E.; GAGARIN, E.S.

Collective and selective magnetic separation of cinder from the
zinc industry. TSvet. met. 36 no.1:30-35 Ja '63. (MIRA 16:5)
(Magnetic separation of ores) (Zinc industry--By-products)

FRIDMAN, S. G.

"Alkylamino esters of thiazole carboxylic acids. I. Benzthiazole-2-carboxylic and benzthiazole-6-carboxylic acids." (p. 1191)

SO: Journal of General Chemistry, (Zhurnal Obshchei Khimii), 1920, Vol. 20, No. 7.

1ST AND 2ND EDITIONS
PROCESSES AND PROPERTIES INDEX

//

Azide derivatives of acetylenic hydrocarbons. V. O.
Kur'min and S. G. Fridman. *Mém. Inst. Chem., Ukrain.*
Acad. Sci. B, 61-78(1930).—CPh₃CCPh₂Cl (I) and NaN₃,
in COMe₂ (20 hrs. at the b. p.) yield CPh₃CCPh₂N₃,
m. 105-70° (*dibromide*, m. 187 (lit.); *dichloride*, m. 181°;
(decompsn.)), not decompd. by aq H₂SO₄. By using CPh₃-
CCMe₂Cl in place of (I), an unstable oil, probably contg
CPh₃:CCMe₂N₃, is obtained. D. C. A.

CCMCA 1 JANUARY

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MATERIALS NOTE

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

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137 AND 138 C00000
139 AND 140 C00000

PROCESSES AND PROPERTIES INDEX

141 AND 142 C00000
143 AND 144 C00000

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A-3

Structure of the product of reaction of α -di-bromo- β -phenylethyl methyl esters with salts of an amide. R. G. FREIDMAN (Mem. Inst. Chem. Ukrain. Acad. Sci., 1938, 3, 587-604).—The mono-acid (I), m.p. 78-79°, previously described (A., 1936, 1108) evolves N_2 and NH_3 when treated with aq. $NaOH$, yields $PhCHO$ with $NaOH$ or H_2SO_4 , and $BrOH$ with $KMnO_4$, and combines with Br or Cl_2 to yield unidentified halogen derivatives, with evolution of N_2 . The reactions point to the structure $CHPh.CN.COMe$ for (I).
R. T.

145 AND 146 C00000
147 AND 148 C00000

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151 AND 152 C00000

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Journal of Organic Chemistry, Vol. 1, No. 1, 1937, 1-10.
 The synthesis of azido derivatives from acetylenic hydrocarbons. S. G. Fridman, *Mem. Inst. Chem., Acad. Sci. USSR*, No. 3, 341 (in Russian 349 No. 3, in German 350) (1937). Reaction between $\text{PhC}\equiv\text{CNa}$ and $\text{C}_6\text{H}_5\text{N}_3$ was investigated with the view toward prep. $\text{PhC}\equiv\text{CCH}_2\text{CH}_2\text{N}_3$. The product obtained was unstable and gave off N_2 . It was isolated as a Br deriv. in 15% yield. The detn. of N, Br and mol. wt. of the Br deriv. corresponded to the addn. of 2 Br atoms to $\text{PhC}\equiv\text{CCH}_2\text{CH}_2\text{N}_3$. But the Br deriv. unlike other azido deriva. did not give off $\frac{1}{2}\text{N}_2$ in presence of H_2SO_4 , alkali or when reduced with SnCl_2 . This may be due to the regrouping of the azido group into $\text{PhC}\equiv\text{CCH}_2$ or $\text{PhCH}\cdot\text{CHC}\equiv\text{CH}$.



The structure of the product is to be investigated by oxidation.
 B. Z. Kamich

ADD. 51.4. REFERENCE LITERATURE EXAMINATION

1st and 2nd orders

PROCESS AND PREPARE

21

Oxidation of azido compounds. S. G. Fridman. *Memo Inst. Chem., Acad. Sci. USSR, S. S. R. 4, No. 3, 351-5* (in Russian 356, in German 356-7) (1937). Oxidation of $\text{CH}_3\text{CICH}_2\text{CH}_2\text{N}_3$, $\text{N}_3\text{CH}_2\text{CH}_2\text{OH}$ and $\text{CH}_3\text{CHCH}_2\text{N}_3$ did not affect the azido group. The stability of the azido group toward oxidation with KMnO_4 will be utilized to study the structure of azido compounds containing a triple bond. H. Z. Kamich

AVO 114 METALLURGICAL LITERATURE CLASSIFICATION

GROUP 11

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

1ST AND 2ND ORDERS		PROCESSES AND PROPERTIES INDEX	
ca		10	
<p>Structure of the products of reaction of sodium phenylacetylene with azidochloroethane. S. Q. Fridman and N. M. Liova'ka. <i>Zapiski Inst. Khim.</i>, 1933, Nauk U. R. S. R., Inst. Khim. 6, Nos. 3-4, 353-63 (in Russian, 364; in German, 365) (1940). - Oxidation with KMnO₄ in alk. medium was used to study the structure of the product of reaction of azidochloroethane with Na phenylacetylene. The product gave 4-phenyl-1,2,3-triazole after oxidation. Hence it is concluded that the reaction product was 4-vinyl-8-phenyl-1,2,3-triazole. B. Z. Kamich</p>			
<p>ALB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>190000 000000</p>		<p>190000 000000</p>	